Cannabis and Insomnia

Patients commonly report that use of cannabis reduces the time it takes them to fall asleep — whether or not insomnia was the complaint with which they presented.

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Abstract

Background: Safe and effective medications are needed for treatment of insomnia. In this large retrospective study of cannabis patients, we analyzed clinical data on patient-reported effects on sleep latency before and after the use of cannabis.

Methods: We conducted a focused, retrospective analysis of data collected from 166 subjects from two cannabis clinics in Southern California (Ventura and San Clemente). Subjects who reported difficulty with sleeping (n=116) and those who reported no difficulty with sleeping (n=51) were included in this analysis. The primary outcome measures were a comparison of both cohorts and the sleep latency time after the use of cannabis compared with sleep latency time without the use of cannabis. Secondary outcomes were measured by comparing sleep latency between the two cohorts, sleep quality, and effect on dreaming. Analysis was conducted by the Wilcoxon-signed rank test and the Kruskal-Wallis test.

Findings: The two cohorts (n=147) did not statistically differ in characteristics except for their ingestion of cannabis orally and in their total cannabis ingested per week. We noted a significant decrease in reported time to sleep after the use of cannabis in both those with and without reported sleep difficulties. In terms of the secondary outcome, we saw a statistically significant difference (p=0.001) in time it took to fall asleep both groups.

Conclusions: Patients seeking physician approval to use cannabis commonly report benefits on decreasing sleep latency, even if a sleep disorder is not the chief complaint. This previously unreported result is supported by recent findings concerning the endocannabinoid system, as well as voluminous anecdotal evidence. Larger double-blinded studies are indicated to rigorously explore this important clinical effect.

Keywords: cannabis, insomnia, cannabis based medicine, sleep, cannabinoids

INTRODUCTION

Fifty-eight percent of adult Americans have reported symptoms of insomnia a few nights a week or more. This staggering prevalence of insomnia and the well-known complications of poor sleep quality, such as its effect on productivity, mental health, and cardiac and endocrinologic function, suggest the need for effective treatment of this spectrum of disorders. Historically, drugs such as morphine, alcohol, and barbiturates were used in various preparations. Cannabis was also used to treat insomnia prior to its prohibition in 1937. Currently, there are classes of medications that have FDA approval for treating sleep disorders: benzodiazepines, barbiturates, and the newest class of non-benzodiazapine hypnotic medications. All have significant adverse side effects, including dependence, serious withdrawal, and complex sleep-related behaviors.

Although its status on Schedule I has made research and procurement of cannabis difficult, several published studies suggest it is effective in the treatment of insomnia. One involved a small but statistically significant double-blind trial in a cohort of insomniacs; others focused on patients with multiple sclerosis and fibromyalgia. The endogenous cannabinoid anandamide, which acts on the same receptors as THC, has been shown to increase sleep through an adenosine pathway in the rat basal forebrain. In studies of brain-wave activity, cannabis has been shown to facilitate a relaxed state of alpha-dominated waves. A study supported by the National Institute on Drug Abuse showed increased EEG alpha activity in the early phase of administration of inhaled cannabis (standardized to 2.5% THC). Studies on humans and animals suggest that THC and CBD have sedative, anxiolytic properties. Side effects are common with the sedative hypnotic class, and some data suggest that cannabis and/or THC have side effects such as grogginess, dry mouth and in some cases may lead to a cannabis-withdrawal syndrome similar to most antidepressants.

METHODS

Study Design: One of us (Tringale) completed a focused retrospective analysis of data previously collected from a cohort of 166 patients in a cannabis-oriented practice run by the other (Jensen). This group of 166 was blindly selected from a group of charts organized by year of initial presentation, in order to provide a broad sample across three years of patient visits. The demographics of this group can be seen in Table 1, below:

Our focus was on two groups from this population: those with and those without documented difficulty sleeping and those with no reported sleep difficulties. Our primary objective was to measure any associations in the groups between age, sex, alcohol use, amount of cannabis used each week, or other factors found in a review of systems. Our secondary objective was to evaluate how cannabis use affects sleep latency — the time it takes to fall asleep — in both groups. Other objectives were to examine the effect of cannabis use on sleep quality and dreaming.

The initial exclusion criteria were the absence of an answer to the question on Dr. Jensen’s intake form concerning trouble sleeping. The final exclusion criteria were the absence of a full response to the two questions of time to sleep without cannabis use and with cannabis use. Study Population: Dr. Jensen’s clinics were in San Clemente and Ventura, California. Patients had been self-referred and were seeking physician approval to use cannabis to treat a variety of medical conditions.

Data Collection: The data was obtained from January through December 2005 as part of the routine intake form filled out by patients. Each form was read by Dr. Jensen, who did the intake evaluation and elicited additional history. Two HIPAA-trained medical students from USC’s Keck School of Medicine (Tringale and Ishimoto) subsequently transposed the data to an Excel worksheet. No patient identifiers were used, and once patients’ answers were coded, charts were returned to storage and not opened again.

Statistical Analysis: To compare characteristics of those with and without insomnia we used a chi-squared analysis to detect any statistical difference. To measure sleep latency we evaluated responses in each group using a Wilcoxon-signed rank test. To compare the two groups, we ran a Kruskal-Wallis test because in examining the data set we found the non-insomnia group to be non-parametric in distribution.

RESULTS

The intake data of 166 patients were assessed for eligibility and 147 were included (See tables 1 and 2). The two cohorts were well matched except for their ingestion of cannabis orally (p=0.0494). Those patients who reported sleep difficulties appeared to ingest more cannabis. As for the secondary-outcome measure of self-reported sleep latency time, 104 of 116 patients reporting difficulty with sleep, and 21 of 31 reporting no difficulty with sleep were included. We noted a significant decrease in reported time to sleep after the use of cannabis in both those groups, with (median -1.25 hours, p=0.000) and those without, continued on next page
Both groups of patients reported increased sleep quality after using cannabis. Among those who had reported trouble sleeping, 79% reported increased sleep quality after using cannabis, while 1% reported no response.

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The significant difference between those patients reporting insomnia and those who did not indicates that there are various levels of insomnia severity. As a median, it took 30 minutes less time for patients to fall asleep, even if they didn’t report sleep troubles. Those with sleep troubles, as a median spent 15 minutes less time falling asleep. By validating patients’ historic reporting of better sleep with a quantifiable difference, this data supports the use of cannabis-based medicine for the treatment of insomnia, especially insomnia with resistant or contraindications to traditional methods of treatment.

Traditionally the use of cannabis to induce sleep has been based on anecdotal evidence. Some small studies conducted in the 1970s showed cannabis to have hypnotic properties. Recent research points to a role for the endocannabinoid system in regulating the sleep cycle. By affecting the rhythm of the adenine pathway, the endocannabinoid system likely plays a role in helping the system reach a threshold level that allows the sleep cycle to begin.

Exogenous cannabinoids such as THC and CBD may override disregulation of this system by resetting the threshold level of adenosine. Therefore, CBD appears to have a modulating effect on the endocannabinoid system in regulating the sleep cycle. By NUIT blocking the adenosine receptors, CBD suppresses adenosine mediated sleep. However, this cannot override disregulation of this system by resetting the threshold level of adenosine. Furthermore, adenosine is known to promote homeostasis within the body. Further research on a strict selection of patients without co-morbid pain, nausea, anxiety and depression conditions may help to isolate the clinical effects of cannabis on primary insomnia.

The patients studied may have over-reported their insomnia to establish the need for a medical cannabis recommendation. This may increase their baseline reporting of difficulty sleeping and even skew their recall on the extent of cannabis’ effect on sleep.

In comparing those experiencing sleep difficulties and those who didn’t, the group reporting sleep difficulties appeared to ingest more cannabis orally. This pattern suggests that as a group, achieving steady levels through the desired time to sleep. In utilizing an edible agent, other side-effects.

CANNABIS-BASED SLEEP AIDS include (from left) buds of “Grand Daddy x Hindu Kush” and marijuana components considered “pure Indica” by Harborside Health Center’s Rick Pftommer; “On the Rice Super Gingerbread” (4-8-0-8 doses, made with THC as a hypnotic. Psychotherapeutics 1993; 33: 355-364.


